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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/538,367

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EXAMINER

FOGARTY, CAITLIN ANNE

ART UNIT

PAPER NUMBER

1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/538,367	Applicant(s) KUBOTA ET AL.	
	Examiner CAITLIN FOGARTY	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. Claims 1 – 8 are pending and presented for this examination where claims 1 and 5 have been amended and claims 6 – 8 are new.

Status of Previous Objections and Rejections

2. The objections to the specification and the claims have been withdrawn in view of the amendment filed on May 2, 2008.

3. The 35 U.S.C. 103(a) rejection of claims 1 – 5 as being unpatentable over Beguinot et al. (WO 02/083966 A1 from IDS) has been maintained.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1 – 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beguinot et al. (WO 02/083966 A1 from the IDS).

Claims 1 – 5 are rejected as discussed in the February 13, 2008 Office action. The amendments to claims 1 and 5 correct a typographical error and do not change the scope of the claims.

With respect to instant claim 6, claim 1 of the English translation of Beguinot discloses a tool steel (eg. cold die steel) with an overlapping composition as seen in the table below.

Element	Instant Claim 6 (mass %)	Beguinot et al. (mass %)	Overlapping Range (mass %)
C	0.9 – 1.3	0.8 – 1.5	0.9 – 1.3
Si	0.9 – 2.0	≤ 2 (Si + Al)	0.9 – 2.0

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Mn	0.1 – 1.0	0.2 – 3	0.2 – 1.0
P	< 0.02	---	0
S	0.03 – 0.09	≤ 0.3	0.03 – 0.09
Cr	8.0 – 11.0	5.0 – 14	8.0 – 11.0
Mo + (W/2)	0.75 – 1.5	≤ 4	0.75 – 1.5
V	< 0.5	≤ 1	< 0.5
Ni	0.4 – 1.3	≤ 5	0.4 – 1.3
Cu	0.2 – 0.8	≤ 1	0.2 – 0.8
Al	0.1 – 0.5	≤ 2 (Si + Al)	0.1 – 0.5
Nb	0.03 – 0.3	≤ 0.1	0.03 – 0.1
Ca	---	≤ 0.1	0
Se	---	≤ 0.1	0
Te	---	≤ 0.1	0
Ti + Zr/2	---	0.06 – 0.15	---
N	---	0.004 – 0.02	---
Fe + impurities	Balance	Balance	Balance

Beguilot does not specifically teach that the tool steel must satisfy the formulas $Ni/Al=1.2$ to 3.7 , $(Cr-4.2xC)=5$ or less, and $(Cr-6.3xC)=1.7$ or more. However, since the compositional ranges of the tool steel disclosed by Beguilot et al. overlap with the ranges recited in instant claim 6, the steel taught by Beguilot would satisfy the formulas. Furthermore, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, *In re Cooper and Foley* 1943 C.D. 357, 553 O.G. 177; 57 USPQ 117, *Taklatwalla v. Marburg*, 620 O.G. 685, 1949 C.D. 77, and *In re Pilling*, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75. In the absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those ordinary skilled in the art. *In re Austin, et al.*, 149 USPQ 685, 688.

Beguilot differs from instant claim 7 because it does not specifically teach that the tool steel must satisfy the formula: $Ni/Al=1.4$ to 3.5 . However, as discussed above, since the compositional ranges of the tool steel disclosed by Beguilot et al. overlap with

the ranges recited in instant claim 6, the steel taught by Beguinot would satisfy the formula recited in instant claim 7.

Claim 8 further limits the composition of Al to 0.15-0.45 mass%. However, this range is still within the range disclosed in Beguinot as seen in the table above.

Since the claimed compositional ranges of claims 6 – 8 either overlap or are within the ranges disclosed by Beguinot, a prima facie case of obviousness exists. See MPEP 2144.05. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the claimed steel alloy composition from the steel alloy composition disclosed by Beguinot because Beguinot teaches the same utility (i.e. tool steel) in the whole disclosed range. The tool steel of Beguinot with the overlapping composition would inherently have the excellent characteristic of suppressing dimensional change as claimed in instant claim 6 and would inherently be used as the claimed cold die steel. See MPEP 2112 III and IV.

Response to Arguments

6. Applicant's arguments filed May 2, 2008 have been fully considered but they are not persuasive.

Arguments are summarized as follows:

a. Beguinot fails to disclose or suggest the objective of the present invention and does not suggest the compositional limits of the claims of the present application as the Beguinot composition is based on a different technical concept from that of the present invention and the composition of the present invention as claimed results in different advantages from the composition of Beguinot.

- b. Beguinot is silent on the effect of the present invention of "excellent in characteristics of suppressant dimensional change". Beguinot simply discloses that "the structure is most homogenous possible in great thickness after hardening". The "homogenous structure" of Beguinot means that Beguinot intends to reduce coarse carbides and to disperse fine carbides, whereby toughness is improved which keeping high hardness.
- c. Beguinot discloses, as prior art, that carbon and chromium are reduced, respectively, to 1% and 8% to reduce coarse carbides, and 2.5% of Mo is added to keep high hardness by precipitating hard carbides. As shown in Table 1 of Beguinot, heat 1, having the composition proposed by Beguinot has substantially the same content of carbon and chromium as heat 2 which is a prior art heat. Thus, the example in the Table in Beguinot has a composition in which Ti, Zr, and N are adjusted on the basis of the composition of the prior art that contains about 1% of carbon, about 8% of chromium, and about 2.5% of molybdenum.
- d. In distinction to Beguinot, the objective of the present invention is to suppress expansion in tempering a steel. The expansion is caused by a release of residual stress introduced in hardening. The release of the residual stress is facilitated by Mo. Mo is added to a steel in the prior art, such as Beguinot, to obtain a secondary hardening by way of forming carbides. Thus the amount of Mo must be limited to not higher than 1.7% in the formula $Mo+W/2$ in the present invention.

e. Since the present invention has the further object of improving machinability, initially carbides are reduced. In order to compensate for the reduction in hardness due to the reduction in the carbides, not less than 0.3% of Ni and not less than 0.1% of Al are added to the steel. The added Ni and Al form an Ni-Al intermetallic compound to provide the steel with hardness, as well as providing an effect of causing a contractional change in dimensions, canceling the above described dilatation.

f. Although claim 1 of Beguinot recites that the steel contains 1 to 4% of Mo + W/2, Beguinot does not disclose or suggest limiting the content thereof to not more than 1.7%. The reason for this is that Beguinot fails to disclose or deal with the object of suppressing dilatation of the steel after hardening and tempering. Furthermore, the Example in Beguinot involves the use of 2.5% of Mo.

g. Although Beguinot defines Si + Al as ≤ 2 , these elements are merely added for the purpose of deoxidation. Thus, one of ordinary skill in the art would want the content of these two materials to be as low as possible. As a consequence, this limitation in Beguinot appears to be simply a broad, hypothetical range, and Si and Al are not positively added for any effect other than deoxidation. Table 1 in Beguinot shows that heat 1 contains 0.03% Al. As a consequence, one of ordinary skill in the art would not contemplate increasing the amount of Al to "0.1 to 0.7%" as claimed in the present claims.

h. Although Beguinot discloses that not more than 0.3% of sulfur can be added to the steel in order to improve machinability, in Beguinot sulfur would be

considered an impurity because heat 1 in Table 1 of Beguinot does not contain sulfur. Further, sulfur is generally an impurity in the technical art of tool steels. It would not be practical or understood by one of ordinary skill in the art that one should add 0.01 to 0.12% sulfur.

i. Beguinot fails to disclose that a Ni-Al intermetallic compound is formed, and thus cannot teach or suggest to one of ordinary skill in the art the claimed relationship between nickel and aluminum.

Examiner's responses are as follows:

a. Beguinot is not required to suggest the objective of the present invention, the technical concept behind the recited compositional limits of the present invention, or the advantages of the compositional limits of the present invention. See MPEP 2144 IV. As discussed in the February 13, 2008 Office action and the above 35 U.S.C. 103(a) rejection, the composition of the tool steel of Beguinot overlaps with the composition of the instant invention.

b. Beguinot is not required to teach that the overlapping composition of Beguinot with the instant invention results in excellent characteristics of suppressant dimensional change. See MPEP 2144 IV. Furthermore, it would be expected that the tool steel of Beguinot would inherently have excellent characteristics of suppressant dimensional change since it has an overlapping composition with the tool steel of the instant invention. See MPEP 2112 III and IV.

- c. The scope of Beguinot is not limited to the specific embodiments it teaches (see *In re Fracalossi* 215 USPQ 569 (CCPA 1982)). As discussed in the February 13, 2008 Office action and the above 35 U.S.C. 103(a) rejection, the composition of the tool steel of Beguinot overlaps with the composition of the instant invention.
- d. Beguinot is not required to teach that Mo is added to the steel in order to control the release of residual stress. See MPEP 2144 IV. In addition, claim 1 of Beguinot teaches that Mo+W/2 is 1.0 – 4.0%. Therefore, the composition of Mo overlaps with the instant invention from 1.0 – 1.7% which is a prima facie case of obviousness as discussed in the February 13, 2008 Office action and the 35 U.S.C. 103(a) rejection above.
- e. The instant claims do not recite that the tool steel has improved machinability and therefore Beguinot is not required to teach this limitation. In addition, Beguinot teaches compositions of Ni and Al in the tool steel that overlap with the compositions of the instant invention as discussed in the February 13, 2008 Office action and the 35 U.S.C. 103(a) rejection above.
- f. Beguinot is not required to teach limiting the content of Mo+W/2 to not more than 1.7%. However, Beguinot teaches an overlapping composition of Mo+W/2 from 1.0-1.7% which is a prima facie case of obviousness as discussed in the February 13, 2008 Office action and the 35 U.S.C. 103(a) rejection above. Furthermore, Beguinot is not required to teach the object of suppressing dilatation of the steel after hardening and tempering (see MPEP 2144 IV). In

regards to the Example in Beguinot that involves the use of 2.5% of Mo, the scope of Beguinot is not limited to the specific embodiments it teaches (see *In re Fracalossi* 215 USPQ 569 (CCPA 1982)).

g. Beguinot is not required to teach that Si and Al are added for the same reason as recited in the instant invention. See MPEP 2144 IV. Beguinot teaches that the composition of Si and Al in the tool steel overlaps with the compositions of Si and Al in the instant invention which is a prima facie case of obviousness as discussed in the February 13, 2008 Office action and the 35 U.S.C. 103(a) rejection above. In regards to the example alloy in Table 1 of Beguinot, the scope of Beguinot is not limited to the specific embodiments it teaches (see *In re Fracalossi* 215 USPQ 569 (CCPA 1982)).

h. Although Table 1 of Beguinot does not contain sulfur, the scope of Beguinot is not limited to the specific embodiments it teaches (see *In re Fracalossi* 215 USPQ 569 (CCPA 1982)). Beguinot teaches that the composition of sulfur in the tool steel overlaps with the composition of sulfur in the instant invention which is a prima facie case of obviousness as discussed in the February 13, 2008 Office action and the 35 U.S.C. 103(a) rejection above.

i. The instant claims do not teach that Ni and Al form a Ni-Al intermetallic compound and therefore Beguinot is not required to teach this limitation. The compositions of Ni and Al taught in Beguinot would satisfy the relationship between Ni and Al recited in the instant invention because the compositions of Ni

and AI of Beguinot overlap with those of the instant invention as discussed in the February 13, 2008 Office action and the 35 U.S.C. 103(a) rejection above.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CAITLIN FOGARTY whose telephone number is (571)270-3589. The examiner can normally be reached on Monday - Friday 8:00 AM - 5:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art
Unit 1793

CF